ABSTRACT

A genetically biotinylated single chain fragment variable (scFv) antibody against Venezuelan equine encephalitis virus (VEE) being applied in a system consisting of an immunofiltration-enzyme assay (IFA) with a light addressable potentiometric sensor (LAPS) for the rapid identification of VEE is disclosed. The IFA entails formation of an immunocomplex sandwich consisting of VEE, biotinylated antibody, fluoresceinated antibody and streptavidin, capturing the sandwich by filtration on biotinylated membrane, and detecting the sandwich by anti-fluorescein urease conjugate. The concentration ratio of biotinylated to fluoresceinated antibodies is investigated and optimized. The IFA/LAPS assay sensitivity was approximately equal to that of a conventional enzyme-linked immunosorbant assay utilizing polystyrene plates and a chromogenic substrate, however, less time and effort were required for performance of the IFA/LAPS assay.